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# *Zi*-nouns in Japanese and Related Issues\*

SHIMADA Masaharu and NAGANO Akiko

## 1. Introduction

Japanese has a morphologically bound anaphor, *zi-* (自), and a morphologically free anaphor, *zibun* (自分).<sup>1</sup> The bound anaphor *zi-* is combined with other morphemes to form verbs, which are often called *zi*-verbs. The following are examples of *zi*-verbs:

- (1) a. *zi-man-suru* 'boast about oneself,' *zi-kyoo-suru* 'confess oneself guilty,' *zi-syu-suru* 'turn oneself in'
- b. *zi-satsu-suru* 'kill oneself,' *zi-ai-suru* 'take care of oneself,' *zi-ritsu-suru* 'establish oneself,' *zi-ten-suru* 'revolve,' *zi-kai-suru* 'collapse,' *zi-baku-suru* 'explode oneself'

The *zi*-verbs in (1a) take an object, and those in (1b) do not. Examples of typical sentences containing *zi*-verbs are as follows:

- (2) a. John-ga     musuko-o *zi-man-shi-ta*.  
          John-Nom son-Acc     self-boast-do-Past  
          'John boasted about his son.'
- b. John-ga     *zi-satsu-shi-ta*.  
          John-Nom self-killing-do-Past  
          'John killed himself.'

These verbs and the anaphoric properties of *zi-* have been discussed by Takezawa (1991), Aikawa (1993), Tsujimura and Aikawa (1999), Kishida (2009, to appear), Kishida and Sato (2008), and Shimada and Nagano (2011), among others. Kishida (2009, to appear) makes an interesting observation

about the difference between the anaphoric properties of *zi-* and those of the free anaphor *zibun* and attempts to explain this difference in terms of morphological boundness. Shimada and Nagano (2011) criticize Kishida's view and offer a new analysis based on a lexeme-based morphology.

In this paper, following and extending upon Shimada and Nagano's approach, we shed light on Japanese nouns containing *zi-*; these *zi-*nouns have received little attention as far as we know. In principle, they can be analyzed using Shimada and Nagano's approach; however, their behaviors raise further theoretical issues concerning the interface between morphology and syntax. In this paper, we confine ourselves to clarifying the problems and suggesting possible solutions.

This paper is organized as follows. In Section 2, we make a brief summary of previous studies of the bound anaphor *zi-*, especially those of Kishida (2009, to appear) and Shimada and Nagano (2011), and confirm the anaphor's basic properties. We also discuss Kishida's view and introduce Shimada and Nagano's lexeme-based morphological treatment of the bound anaphor. In Section 3, we observe how *zi-*nouns behave and attempt to explain their behaviors. In Section 4, we discuss remaining problems and provide possible solutions.

## 2. Previous studies on affixal anaphors in Japanese

### 2.1. Kishida (2009, to appear)

In Kishida (2009, to appear), *zi-* and *ziko-* (自己) are grouped together as affixal anaphors. *Ziko-* is combined with a Sino-Japanese verbal noun to form a new Sino-Japanese verb, as in (3):

- (3) John-ga    ziko-hihan-shi-ta.  
       John-Nom self-criticism-do-Past  
       'John<sub>1</sub> criticized himself<sub>1</sub>.'

In (3), *ziko-* is attached to the verb *hihan-suru* to create the verb *ziko-hihan-suru*, and the anaphor allows local binding like non-affixal anaphors such as

*zibun*, as shown in Kishida (2009, to appear):

- (4) John-ga zibun-o hihan-shi-ta.  
 John-Nom self-Acc criticism-do-Past  
 ‘John<sub>i</sub> criticized himself<sub>i</sub>.’

Kishida claims that, although *ziko*- and *zibun* are both anaphoric expressions, they differ in reflexivity. According to her, the referent of *ziko*- is necessarily identical to its antecedent, but *zibun* can refer to something related to its antecedent. This so-called statue reading was originally discussed by Jackendoff (1992) with the following example:

- (5) Ringo started undressing himself. (*himself* = Ringo, a statue of Ringo)

In addition to the situation in which Ringo is removing the clothes that he is wearing, (5) can describe the situation in which Ringo is removing the clothes that the statue depicting him is wearing. This additional interpretation that the English anaphor *himself* allows is called a statue interpretation. Based on the observation that *zibun* can refer to a statue of John in (4), but not *ziko*- in (3), Kishida claims that *ziko*- and *zibun* are different in that the former resists the statue interpretation.

Kishida (2009, to appear) refers to the classification of anaphors given in Lidz (2001a, b). Lidz classifies anaphors into two types: pure reflexives and near reflexives. Pure reflexives must be completely identical to their antecedents, while near reflexives can refer to something related to or similar to their antecedents but not necessarily identical to them. In fact, a statue reading is only possible for near reflexives. Kishida (2009, to appear) proposes that *zi*- and *ziko*-, requiring strict identity, are pure reflexives and that *zibun*, allowing a statue reading, is a near reflexive. Kishida (2009, to appear) then draws the following generalization that affixal anaphors function as pure reflexives and that non-affixal anaphors function as near reflexives:

- (6) a. bound-morpheme anaphor = pure reflexive anaphor  
 b. free-morpheme anaphor = near reflexive anaphor

Kishida (2009, to appear) observes further differences between affixal anaphors and non-affixal anaphors. First, only *zibun* allows non-local binding as well as local binding:

- (7) a. Mary<sub>2</sub>-wa [John<sub>1</sub>-ga ziko<sub>1/\*2</sub>-hihan-shi-ta] to omot-ta.  
 Mary-Top John-Nom self-criticism-do-Past C think-Past  
 'Mary<sub>2</sub> thought that John<sub>1</sub> criticized {himself<sub>1</sub>/\*her<sub>2</sub>}.'  
 b. Mary<sub>2</sub>-wa [John<sub>1</sub>-ga zibun<sub>1/2</sub>-o hihan-shi-ta] to omot-ta.  
 Mary-Top John-Nom self-Acc criticism-do-Past C think-Past  
 'Mary<sub>2</sub> thought that John<sub>1</sub> criticized {himself<sub>1</sub>/her<sub>2</sub>}.'

(7) shows that the non-affixal anaphor *zibun* can refer to both the local subject *John* and the matrix subject *Mary*, but the affixal anaphor *ziko*- can only refer to the local subject.

Second, *ziko*- and *zibun* behave differently in comparative deletion constructions. Kishida makes the following observation:

- (8) a. Mary-ga John-yorimo hageshiku ziko-hihan-shi-ta.  
 Mary-Nom John than severely self-criticism-do-Past  
 'Mary criticized herself more severely than John criticized himself.' (sloppy reading)  
 \*'Mary criticized herself more severely than John criticized her.'  
 (\*non-sloppy reading)  
 b. Mary-ga John-yorimo hageshiku zibun-o hihan-shi-ta.  
 Mary-Nom John than severely self-Acc criticism-do-Past  
 'Mary criticized herself more severely than John criticized himself.' (sloppy reading)  
 'Mary criticized herself more severely than John criticized her.'  
 (non-sloppy reading)

(8) shows that non-sloppy identity reading is prohibited with the affixal anaphor *ziko*- in comparative deletion constructions.

In summary, Kishida asserts that the semantic property of anaphoric expressions depends on their surface morphological forms and that boundness and reflexivity correlate to each other. She proposes that the relationship between boundness and reflexivity can be generalized as illustrated in (6) and claims that this generalization is valid cross-linguistically.

## 2.2. Shimada and Nagano (2011): An account based on a lexeme-based morphology

In contrast to Kishida (2009, to appear), Shimada and Nagano (2011) argue that the pure reflexive property of *zi*- and *ziko*- cannot be attributed to their morphological property of boundness. They provide evidence that some non-affixal anaphors function as pure reflexives, contrary to the generalization in (6). In Japanese, there are non-affixal anaphors other than *zibun*, such as *mizukara* (自ら) and *onore* (己). They occur as free morphemes and allow local binding:

- (9) John-ga mizukara/onore-o hihan-shi-ta.  
 John-Nom self-Acc criticism-do-Past  
 ‘John<sub>1</sub> criticized himself<sub>1</sub>.’

Interestingly, even *ziko* can be non-affixal. As illustrated in the following example, the case particle *-o* is often attached to *ziko*, which indicates that *ziko* can be a determiner phrase (DP), functioning as an object.

- (10) John-ga ziko-o hihan-shi-ta.  
 John-Nom self-Acc criticism-do-Past  
 ‘John<sub>1</sub> criticized himself<sub>1</sub>.’

Shimada and Nagano (2011) observe that, although they are free morphemes, these anaphors behave as pure reflexives rather than near reflexives.

First, consider the following examples:

- (11) a. John-ga zibun-o arat/sibat/nade-ta.  
 John-Nom self-Acc wash/bind/stroke-Past  
 ‘John<sub>1</sub> washed/bound/stroked himself<sub>1</sub>.’ (*zibun* = John, a statue of John)
- b. John-ga mizukara/onore/ziko-o arat/sibat/nade-ta.  
 John-Nom self-Acc wash/bind/stroke-Past  
 ‘John<sub>1</sub> washed/bound/stroked himself<sub>1</sub>.’  
 (*mizukara*, *onore*, *ziko* = John, \*a statue of John)

*Zibun* allows a statue interpretation, as noted earlier. (11a) can describe the situation in which John washed a statue depicting himself. In contrast, (11b) (where *mizukara*, *onore*, or *ziko* occurs instead of *zibun*) resists this interpretation. Although the anaphors *mizukara*, *onore*, and *ziko* are morphologically non-affixal like *zibun*, they cannot refer to a statue of John, requiring a completely identical interpretation in (11b).<sup>2</sup> In this sense, *mizukara*, *onore*, and *ziko* should be classified as pure reflexives. The generalization in (6) does not correctly capture their behavior.

Next, consider the possibility of non-local binding:

- (12) Mary<sub>2</sub>-wa [John<sub>1</sub>-ga mizukara/onore/ziko<sub>1/\*2</sub>-o hihan-shi-ta]  
 Mary-Top John-Nom self-Acc criticism-do-Past  
 to omot-ta.  
 C think-Past  
 ‘Mary<sub>2</sub> thought that John<sub>1</sub> criticized {himself<sub>1</sub>/\*her<sub>2</sub>}.’

(12) shows that *mizukara*, *onore*, and *ziko* are necessarily locally bound. Therefore, the non-affixal anaphors *mizukara*, *onore*, and *ziko*, like *zi*-/*ziko*-, are pure reflexives, contrary to the generalization in (6).

Finally, consider how *mizukara*, *onore*, and *ziko* behave in a comparative deletion construction. If (6) is a correct generalization, then they should allow not only a sloppy interpretation but also a non-sloppy interpretation in

the following example. Unfortunately, this is not the case:

- (13) Mary-ga John-yorimo hageshiku mizukara/onore/ziko-o  
 Mary-Nom John than severely self-Acc  
 hihan-shi-ta.  
 criticism-do-Past  
 ‘Mary criticized herself more severely than John criticized him-  
 self.’ (sloppy reading)  
 ‘Mary criticized herself more severely than John criticized her.’  
 (\*non-sloppy reading)

As is observed in (13), *mizukara*, *onore*, and *ziko* do not allow a non-sloppy interpretation. This diagnosis further indicates their pure reflexivity.

The classification of Japanese anaphors based on both Kishida (2009, to appear) and Shimada and Nagano (2011) is thus summarized as follows:

Table 1. Classification of Japanese anaphors

	Pure reflexives	Near reflexives
Affixal anaphors	zi-, ziko-	
Non-affixal anaphors	mizukara, onore, ziko	zibun

Shimada and Nagano’s observation that Japanese non-affixal anaphors, such as *mizukara*, *onore*, and *ziko*, function as pure reflexives poses a serious problem for the generalization in (6), which states that affixal anaphors and non-affixal anaphors correspond to pure reflexives and near reflexives, respectively. In fact, morphological boundness and semantic properties do not necessarily have a one-to-one correspondence.

Shimada and Nagano (2011) present an alternative account based on a lexeme-based morphology (Aronoff (1976, 1994, 2007), Anderson (1992), Fradin (2003)) to capture the relationship between affixal and non-affixal anaphors. The lexeme is a lexical unit at an abstract level, as introduced in Matthews (1991). A lexeme has several variants for its surface realization, namely, word-forms.<sup>3</sup> In English, for example, a noun has its singular and

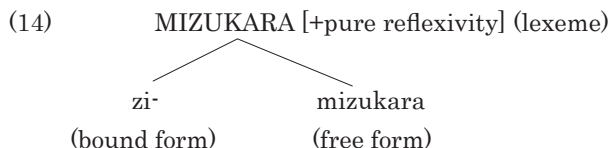


plural forms, as illustrated by the pair of *man* and *men* (Carstairs-McCarthy (2002: 23)). A verb also changes its surface form according to person, number, and tense. However, the syntactic categories and lexical meanings of nouns and verbs are invariable regardless of the surface form they take. Although they are distinct in surface form, both *man* and *men* are nouns and have the same lexical meaning. The lexical unit common to *man* and *men* existing at the abstract level is the lexeme. *Man* and *men* are thus word-forms of the same lexeme MAN.

Shimada and Nagano (2011) agree with Fradin (2003), that the lexeme consists of graphemic (G), phonological (F), syntactical (SX), morphological (M), and semantic (S) information. Within this framework, a lexeme's word-forms, including their boundness, are specified in the G or F information. This view implies that a lexeme can have a bound form as well as a free form as its surface realization. Given that semantic properties are given in the S information, the semantic properties of a word-form can be attributed to the S information its lexeme bears, but not to its boundness. From this perspective, the semantic characteristics of the affixal and non-affixal anaphors in Japanese discussed earlier come directly from the lexeme, not the surface form. Whether anaphors are realized as bound or free, their semantic properties are the same if they are derived from the same lexeme. The lexeme itself has the property of pure or near reflexivity.

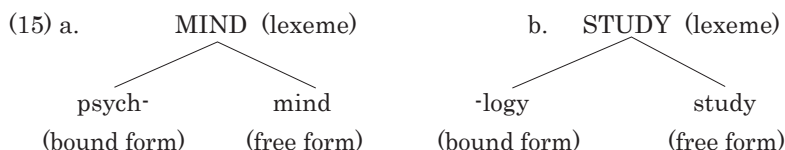
Shimada and Nagano (2011) focus on the pair of *zi-* and *mizukara*. They are both pure reflexives; they share the same anaphoric properties and differ only in boundness. Shimada and Nagano (2011) propose that they are word-forms of, and belong to, the same lexeme MIZUKARA. The reflexive properties of the two forms are simply manifestations of the semantic properties of their lexeme MIZUKARA. One might wonder whether *zi-* and *mizukara* are really morphologically related because their surface forms and phonological aspects appear unrelated (see also Carstairs-McCarthy (2002: 32-33) on this point). Shimada and Nagano find evidence for their proposal in the writing system specific to Japanese. Chinese characters are used as one of the writing systems for Japanese. *Zi-* and *mizukara* are written with the same Chinese character, '自.'

Chinese characters are read in two ways in Japanese: Sino-Japanese pronunciation and native Japanese pronunciation. In the case of the Chinese character ‘自,’ *zi-* is its Sino-Japanese pronunciation and *mizukara* is its native Japanese pronunciation. Given that word-forms of the same lexeme are determined by its G information as discussed above, the fact that *zi-* and *mizukara* are written with the same Chinese character strongly suggests that they belong to the same lexeme. The lexeme MIZUKARA can be realized as the bound form *zi-* or as the free form *mizukara*, showing the same semantic properties:



The two ways of pronouncing Chinese characters in Japanese reflect this lexeme-based organization of the lexicon (cf. Morioka (2004: Part 1)).

Shimada and Nagano's (2011) lexeme-based approach applies generally to other languages, which strongly suggests that the approach captures one aspect of the UG properties of human language. Let us consider English cases, for example.<sup>4</sup> English has neoclassical combining forms, such as *psych-* or *-logy* (ten Hacken (1994), Bauer (1998), Baeskow (2004)). Both *psych-* and *-logy* are morphologically bound because neither can occur independently. Interestingly, *psych-* and *-logy* have their free counterparts, *mind* and *study*, respectively. Shimada and Nagano (2011) explain the relationships between the combining forms and their free counterparts by claiming that *psych-* and *mind* are word-forms of the same lexeme and that *-logy* and *study* belong to another lexeme. These relationships are illustrated as follows:



Shimada and Nagano (2011) further observe that the compound corresponding to *mindstudy*, consisting of free forms and meaning ‘psychology,’ really exists in Hungarian (*lélektan*); that is, Hungarian has not only the ‘neoclassical-compound’ form of *psychology* (*pszichológia*) but also its ‘N-N compound’ form.<sup>5</sup> Shimada and Nagano’s (2011) lexeme-based approach is thus supported from a cross-linguistic point of view.

### 3. *Zi*-nouns in Japanese

Kishida (2009, to appear) and Shimada and Nagano (2011) discuss the status of *zi*- contained in *zi*-verbs. Considering a wider range of Japanese data, we find that many (non-verbal) nouns contain *zi*-, which we call *zi*-nouns. The following are some examples:

- (16) a. *zihi* (自費) ‘one’s own expense,’ *ziriki* (自力) ‘one’s own ability,’  
           *zishitsu* (自室) ‘one’s own room,’ *zikoku* (自国) ‘one’s own country,’  
           *zisha* (自社) ‘one’s own company,’ *zisetsu* (自説) ‘one’s own  
           idea’  
       b. *kakuzi* (各自) ‘each,’ *dokuzi* (独自) ‘unique’

This section is devoted to showing how *zi*-nouns can be analyzed along the lines of Shimada and Nagano (2011).

#### 3.1. Compounding

As discussed in Section 2, Shimada and Nagano (2011) analyze *zi*- as a bound form of the lexeme MIZUKARA. Because it is bound, *zi*- must be combined with other forms. Scalise (1984) claims that affixation has a positional restriction in the sense that any affix has a fixed position where it can occur; therefore, *zi*- is never classified as an affix because *zi*- can occur leftward as in (16a) or rightward as in (16b). The forms which *zi*- attaches to in (16) are also bound forms of lexemes. Consider, for example, *hi* (費) in *zihi* (自費); *hi* is bound and is in Sino-Japanese pronunciation. The Chinese character

‘費’ is pronounced as ‘tsuiyasu’ in native Japanese style, meaning ‘spending (money).’ Furthermore, *hi* can appear on the left side of a word, as in *hiyou* (費用) ‘cost.’ Therefore, in Shimada and Nagano’s view, *hi* (費) is a bound form of the lexeme TSUIYASU. This indicates that *zihi* is a composite of the bound forms of different lexemes. Following Shimada and Nagano (2011), we regard a composite of bound forms as a type of compound. The *zi*-nouns in (16) are thus all considered to be compounds.

The words derived from so-called combining forms are thus also a type of compound. Combining forms are bound forms of lexemes, as argued in (15). Consider, for example, *psychology*. It is derived by merging the combining forms *psych-* and *-logy* (Baeskow (2004)). One might wonder whether this is really a case, since *-logy* seems to be positionally restricted to the right side of a word. As pointed out in Shimada and Nagano (2011), however, we can construct a hypothetical compound *logophobia*, where *-logy* is posited to the left and *-phobia*, meaning ‘fear,’ to the right head position. Certainly, we may not find such a compound as *logophobia* in a dictionary. However, we can grammatically interpret the hypothetical word *logophobia* as the name of a new disease by imagining that a medical paper reports a new case necessary for medical treatment in which people abnormally or pathologically fear academic activity. Consider, in contrast, the impossibility of a hypothetical word where a suffix is posited to the left, such as *ize-hospital* (cf. *hospitalize*). Regardless of the situations we may imagine, *ize-hospital* cannot be given a grammatical interpretation. Affixes, unlike lexemes, must meet the positional restriction. *Ize-hospital* is never acceptable, whether we can imagine the situation to be described or not, because UG prohibits affixations violating the positional restriction. Hypothetical compounds, such as *logophobia*, are grammatical in principle in the sense that they violate no condition related to UG. It is thus reasonable to characterize *psychology* as a compound, a result of lexeme formation (Aronoff (1994: 16)).

We would like to claim that compounds consisting of bound forms are nouns in principle. Because right-headedness holds in word formation processes (Williams (1981)), the word-form on the right side of a compound noun is categorically a noun. Furthermore, considering that positional restric-

tions are irrelevant to word-forms of lexemes, which occur leftward or rightward, as illustrated by *hi* (費) in the examples *zihī* (自費) and *hiyo* (費用) and *logy* in the examples of *psychology* and *logophobia*, it follows that bound forms constituting compounds are nouns.

Let us reconsider *zi*-verbs, based on what has been stated in this section so far. *Zi*-verbs consist of verbal nouns and the light verb *-suru*. For example, *zisatsu-suru* ‘suicide’ is composed of the verbal noun *zisatsu* (自殺) and the light verb *-suru*. This fundamental property of *zi*-verbs immediately follows from the lexeme-based approach taken here. *Zi*- is a bound form and must be combined with other forms to satisfy the morphological requirement. A compound containing the bound form *zi*- is necessarily a noun, as discussed above. What is peculiar to *zi*-verbs is that the part of nominal compounds (e.g. *zisatsu*) must be simultaneously verbal. Nouns with verbal properties are verbal nouns. Only verbal nouns can be supported by the light verb *-suru* to function as verbs. Due to this fact, the part of compounds containing *zi*- in *zi*-verbs is always a verbal noun. *Zisatsu* is a compound consisting of *zi*- (自) and *-satsu* (殺) and is a verbal noun. Therefore, both *zi*-verbs and *zi*-nouns are derived through compounding involving the bound allomorph *zi*-, sharing nominal characteristics.

Kishida (2009, to appear) and Shimada and Nagano (2011) discuss the reflexivity of *zi*- in *zi*-verbs. Given that the same compounding process is involved in *zi*-verbs and *zi*-nouns, it is predicted that a pure reflexive reading is available not only in *zi*-verbs but also in *zi*-nouns. In the next subsection, we investigate how *zi*-nouns behave in terms of reflexivity, depending on the diagnostics introduced in Section 2.

### 3.2. *Zi*-nouns and reflexivity

*Zi*-nouns are compounds, as discussed in the preceding subsection. *Zi*- in the compounds in (16a) roughly means possession. The possessed elements (or the elements under control) are expressed by the attached form. In *zihī* (自費), for example, *hi* (費) means money possessed by someone referred to by *zi*-. We can paraphrase this as follows:

- (17) zibun-no kane  
 self-Gen money  
 ‘one’s own money’

The other *zi*-nouns in (16a) can be paraphrased in a similar way. Pairs of *zi*-nouns and their corresponding paraphrases are given below:

- (18) a. ziriki (自力) ‘one’s own ability’  
 b. zibun-no chikara (力)  
 self-Gen ability ‘one’s own ability’
- (19) a. zishitsu (自室) ‘one’s own room’  
 b. zibun-no heya (部屋)  
 self-Gen room ‘one’s own room’
- (20) a. zikoku (自国) ‘one’s own country’  
 b. zibun-no kuni (国)  
 self-Gen country ‘one’s own country’
- (21) a. zisha (自社) ‘one’s own company’  
 b. zibun-no kaisha (会社)  
 self-Gen company ‘one’s own company’
- (22) a. zisetsu (自説) ‘one’s own idea’  
 b. zibun-no setsu (説)  
 self-Gen idea ‘one’s own idea’

We thus compare *zi*-nouns with phrases containing *zibun* in reflexivity, bearing in mind that *zibun* is a near reflexive, as shown in Table 1.

Let us begin by contrasting the noun *zihhi* and its phrasal paraphrase *zibun-no kane*. First, we apply the local-binding diagnostic:

- (23) a. John<sub>2</sub>-ga Tom<sub>1</sub>-ga Nancy-to zi<sub>1/\*2</sub>-hi-de ryoko-shi-ta  
 John-Nom Tom-Nom Nancy-with self-money-with trip-do-Past  
 to omot-ta  
 C think-Past  
 ‘John<sub>2</sub> thought that Tom<sub>1</sub> took a trip with Nancy with his<sub>1/\*2</sub>

money.'

- b. John<sub>2</sub>-ga Tom<sub>1</sub>-ga Nancy-to zibun<sub>1/2</sub>-no-kane-de  
 John-Nom Tom-Nom Nancy-with self-Gen-money-with  
 ryoko-shi-ta to omot-ta  
 trip-do-Past C think-Past  
 'John<sub>2</sub> thought that Tom<sub>1</sub> took a trip with Nancy with his<sub>1/2</sub>  
 money.'

Contrary to *zibun*, *zi-* in *zihhi* cannot take its antecedent in the higher clause, which indicates that *zi-* is a pure reflexive. The comparative deletion diagnostic shows the same contrast:

- (24) a. John-ga Nancy-yori gokani zi-hi-de  
 John-Nom Nancy-than luxuriously self-money-with  
 ryoko-shi-ta  
 trip-do-Past  
 'John traveled in luxury with his money much more than Nancy did with her money.'  
 (sloppy reading)  
 \*'John traveled in luxury with his money much more than Nancy did with his money.'  
 (\*non-sloppy reading)
- b. John-ga Nancy-yori gokani zibun-no-kane-de  
 John-Nom Nancy-than luxuriously self-Gen-money-with  
 ryoko-shi-ta  
 trip-do-Past  
 'John traveled in luxury with his money much more than Nancy did with her money.'  
 (sloppy reading)  
 'John traveled in luxury with his money much more than Nancy did with his money.'  
 (non-sloppy reading)

*Zibun* allows a non-sloppy interpretation and a sloppy interpretation, whereas *zi-* only allows a sloppy interpretation, which further suggests that *zi-* in *zihhi* is a pure reflexive.

The same holds true of the pairs in (18)-(22). Unlike *zibun*, *zi-* (occurring in *ziriki*, *zishitsu*, *zikoku*, *zisha*, and *zisetsu*) only allows local binding and resists non-local binding interpretations. This contrast is illustrated in (25)-(29):

- (25) a. John<sub>2</sub>-ga Tom<sub>1</sub>-ga zi<sub>1/\*2</sub>-riki-de ronbun-o kai-ta  
 John-Nom Tom-Nom self-ability-with paper-Acc write-Past  
 to omot-ta  
 C think-Past  
 'John<sub>2</sub> thought that Tom<sub>1</sub> wrote a paper for himself<sub>1/\*2</sub>.'
- b. John<sub>2</sub>-ga Tom<sub>1</sub>-ga zibun<sub>1/2</sub>-no-chikara-de ronbun-o  
 John-Nom Tom-Nom self-Gen-ability-with paper-Acc  
 kai-ta to omot-ta  
 write-PAST C think-Past  
 'John<sub>2</sub> thought that Tom<sub>1</sub> wrote a paper for himself<sub>1/2</sub>.'
- (26) a. John<sub>2</sub>-ga Tom<sub>1</sub>-ga Nancy-ni zi<sub>1/\*2</sub>-shitsu-de kisu-o  
 John-Nom Tom-Nom Nancy-Dat self-room-in kiss-Acc  
 shi-ta to omot-ta  
 do-Past C think-Past  
 'John<sub>2</sub> thought that Tom<sub>1</sub> kissed Nancy in his<sub>1/\*2</sub> room.'
- b. John<sub>2</sub>-ga Tom<sub>1</sub>-ga Nancy-ni zibun<sub>1/2</sub>-no-heya-de kisu-o  
 John-Nom Tom-Nom Nancy-Dat self-Gen-room-in kiss-Acc  
 shi-ta to omot-ta  
 do-PAST C think-Past  
 'John<sub>2</sub> thought that Tom<sub>1</sub> kissed Nancy in his<sub>1/2</sub> room.'
- (27) a. John<sub>2</sub>-ga Taro<sub>1</sub>-ga zi<sub>1/\*2</sub>-koku-o hihan-shi-ta to  
 John-Nom Taro-Nom self-country-Acc criticism-do-Past C



omot-ta

think-Past

‘John<sub>2</sub> thought that Taro<sub>1</sub> criticized his<sub>1/\*2</sub> country.’

- b. John<sub>2</sub>-ga Taro<sub>1</sub>-ga zibun<sub>1/2</sub>-no-kuni-o hihan-shi-ta  
 John-Nom Taro-Nom self-Gen-country-Acc criticism-do-PAST  
 to omot-ta  
 C think Past  
 ‘John<sub>2</sub> thought that Taro<sub>1</sub> criticized his<sub>1/2</sub> country.’

- (28) a. John<sub>2</sub>-ga Tom<sub>1</sub>-ga zi<sub>1/\*2</sub>-sha-no kabu-o kat-ta to  
 John-Nom Tom-Nom self-company-Gen stock-Acc buy-Past C  
 omot-ta  
 think-Past  
 ‘John<sub>2</sub> thought that Tom<sub>1</sub> bought his<sub>1/\*2</sub> company’s stocks.’  
 b. John<sub>2</sub>-ga Tom<sub>1</sub>-ga zibun<sub>1/2</sub>-no-kaisha-no kabu-o  
 John-Nom Tom-Nom self-Gen-company-Gen stock-Acc  
 kat-ta to omot-ta  
 buy- Past C think-Past  
 ‘John<sub>2</sub> thought that Tom<sub>1</sub> bought his<sub>1/2</sub> company’s stocks.’

- (29) a. John<sub>2</sub>-ga Tom<sub>1</sub>-ga zi<sub>1/\*2</sub>-setsu-o hihan-shi-ta to  
 John-Nom Taro-Nom self-idea-Acc criticism-do-Past C  
 omot-ta  
 think-Past  
 ‘John<sub>2</sub> thought that Tom<sub>1</sub> criticized his<sub>1/\*2</sub> idea.’  
 b. John<sub>2</sub>-ga Tom<sub>1</sub>-ga zibun<sub>1/2</sub>-no-setsu-o hihan-shi-ta to  
 John-Nom Taro-Nom self-Gen-idea-Acc criticism-do-Past C  
 omot-ta  
 think-Past  
 ‘John<sub>2</sub> thought that Tom<sub>1</sub> criticized his<sub>1/2</sub> idea.’

Likewise, in comparative deletion constructions, we can observe the difference between *zi-* and *zibun*. *Zi-* does not allow a non-sloppy reading, as il-

illustrated in (30)-(34):

- (30) a. John-ga Nancy-yori zi-riki-ni tayot-ta  
 John-Nom Nancy-than self-ability-on depend-Past  
 ‘John depended on himself much more than Nancy depended on herself.’ (sloppy reading)  
 \*‘John depended on himself much more than Nancy depended on him.’ (\*non-sloppy reading)
- b. John-ga Nancy-yori zibun-no-chikara-ni tayot-ta  
 John-Nom Nancy-than self-Gen-ability-on depend-Past  
 ‘John depended on himself much more than Nancy depended on herself.’ (sloppy reading)  
 ‘John depended on himself much more than Nancy depended on him.’ (non-sloppy reading)
- (31) a. John-ga Nancy-yori gussuri zi-shitsu-de ne-ta  
 John-Nom Nancy-than soundly self-room-in sleep-Past  
 ‘John slept in his room more soundly than Nancy slept in her room.’ (sloppy reading)  
 \*‘John slept in his room more soundly than Nancy slept in his room.’ (\*non-sloppy reading)
- b. John-ga Nancy-yori gussuri zibun-no-heya-de ne-ta  
 John-Nom Nancy-than soundly self-Gen-room-in sleep-Past  
 ‘John slept in his room more soundly than Nancy slept in her room.’ (sloppy reading)  
 ‘John slept in his room more soundly than Nancy slept in his room.’ (non-sloppy reading)
- (32) a. John-ga Nancy-yori hayaku zi-koku-ni kaet-ta  
 John-Nom Nancy-than soon self-country-to return-Past  
 ‘John returned to his country sooner than Nancy returned to her country.’ (sloppy reading)  
 \*‘John returned to his country sooner than Nancy returned to

his country.’ (\*non-sloppy reading)

- b. John-ga Nancy-yori hayaku zibun-no-koku-ni  
 John-Nom Nancy-than soon self-Gen-country-to  
 kaet-ta  
 return-Past  
 ‘John returned to his country sooner than Nancy returned to  
 her country.’ (sloppy reading)  
 ‘John returned to his country sooner than Nancy returned to  
 his country.’ (non-sloppy reading)

- (33) a. John-ga Tom-yori takusan zi-sha-no  
 John-Nom Tom-than much self-company-Gen  
 kabu-o kat-ta  
 stock-Acc buy-Past  
 ‘John bought more stocks of his own company than Tom did.’  
 (sloppy reading, \*non-sloppy reading)
- b. John-ga Tom-yori takusan zibun-no-kaisha-no  
 John-Nom Tom-than much self-Gen-company-Gen  
 kabu-o kat-ta  
 stock-Acc buy-Past  
 ‘John bought more stocks of his own company than Tom did.’  
 (sloppy reading, non-sloppy reading)
- (34) a. John-ga Tom-yori kibishiku zi-setsu-o  
 John-Nom Tom-than severely self-idea-Acc  
 hihan-shi-ta  
 criticism-do-Past  
 ‘John criticized his own idea more severely than Tom did.’  
 (sloppy reading, \*non-sloppy reading)
- b. John-ga Tom-yori kibishiku zibun-no-setsu-o  
 John-Nom Tom-than severely self-Gen-idea-Acc  
 hihan-shi-ta  
 criticism-do-Past

‘John criticized his own idea more severely than Tom did.’  
(sloppy reading, non-sloppy reading)

Even when it occurs as a head posited to the right, as in the examples in (16b), *zi*- behaves as a pure reflexive. Non-local binding is not allowed, as in (35a), and a non-sloppy reading is not allowed in comparative deletion constructions, as in (36a):

- (35) a. John<sub>2</sub>-ga Nancy<sub>1</sub>-ga doku-*zi*<sub>1/\*2</sub>-no-yarikata-de  
John-Nom Nancy-Nom personal-self-Gen-way-in  
benkyo-shi-ta to omot-ta.  
study-do-PAST C think-Past  
‘John thought Nancy studied in her way.’ (local binding)  
\*‘John thought Nancy studied in his way.’ (\*non-local binding)
- b. John<sub>2</sub>-ga Nancy<sub>1</sub>-ga zibun<sub>1/2</sub>-no-yarikata-de benkyo-shi-ta  
John-Nom Nancy-Nom self-Gen-way-in study-do-Past  
to omot-ta.  
C think-Past  
‘John thought Nancy studied in her way.’ (local binding)  
‘John thought Nancy studied in his way.’ (non-local binding)
- (36) a. John-ga Tom-yori kibishiku doku-*zi*-no-yarikata-o  
John-Nom Tom-than severely personal-self-Gen-way-Acc  
hihan-shi-ta.  
criticism-do-PAST  
‘John criticized his own method more severely than Tom did.’  
(sloppy reading, \*non-sloppy reading)
- b. John-ga Tom-yori kibishiku zibun-no-yarikata-o  
John-Nom Tom-than severely self-Gen-way-Acc  
hihan-shi-ta.  
criticism-do-Past  
‘John criticized his own method more severely than Tom did.’  
(sloppy reading, non-sloppy reading)

In summary, *zi*- behaves as a pure reflexive, whether it occurs in *zi*-verbs or in *zi*-nouns. Both *zi*-verbs and *zi*-nouns are derived through compounding utilizing the bound form of the lexeme MIZUKARA in (14) and are thus grouped together in a sense; therefore, it is not unnatural that anaphoric interpretations of *zi*- in *zi*-verbs and in *zi*-nouns are the same.

Before moving to the next section, we briefly examine nouns combined with *ziko*-, which Kishida (2009, to appear) claims is another affixal anaphor. As discussed in section 2.1, Kishida provides the evidence that *ziko*- is a pure reflexive. For example, *ziko*- does not allow for a non-local binding interpretation when it forms a verb with other forms, as illustrated in (7a), repeated here for convenience:

- (37) Mary<sub>2</sub>-wa [John<sub>1</sub>-ga ziko<sub>1/\*2</sub>-hihan-shi-ta] to omot-ta.  
 Mary-Top John-Nom self-criticism-do-Past C think-Past  
 ‘Mary<sub>2</sub> thought that John<sub>1</sub> criticized {himself<sub>1</sub>/\*her<sub>2</sub>}.’

*Ziko*- in *ziko*-nouns also behaves as a pure reflexive:

- (38) a. Mary<sub>2</sub>-wa [John<sub>1</sub>-ga ziko<sub>1/\*2</sub>-ketsu-o yuketsu-shi-ta] to  
 Mary-Top John-Nom self-blood-Acc transfusion-do-Past C  
 omot-ta  
 think-Past  
 ‘Mary thought that John received autologous blood transfusions’  
 (local-binding interpretation, \*non-local binding interpretation)
- b. Mary<sub>2</sub>-wa [John<sub>1</sub>-ga zibun<sub>1/2</sub>-no-chi-o yuketsu-shi-ta] to  
 Mary-Top John-Nom self-Gen-blood-Acc transfusion-do-Past C  
 omot-ta  
 think-Past  
 ‘Mary thought that John received autologous blood transfusions’  
 (local-binding interpretation, non-local binding interpretation)

*Ziko-* functions equally in *ziko*-verbs and *ziko*-nouns.

## 4. Further issues

In the final section, we are concerned with several remaining problems regarding *zi-*. Additionally, we provide some comments and seek possible explanations. Our main concerns are the status of *zibun* and *ziko* and the interpretation of *zi*-nouns.

### 4.1. *Zibun*

Kishida (2009, to appear) classifies *zibun* (自分) as a near reflexive based on the diagnostics introduced in Section 2. However, the lexeme-based approach of Shimada and Nagano (2011) predicts that it behaves as a pure reflexive because *zibun* can be decomposed into the bound forms *zi-* (自) and *-bun* (分) and be classified as a *zi*-noun. Nevertheless, *zibun* behaves as a near reflexive.

According to several dictionaries of Sino-Japanese words, *-bun* (分) in *zibun* means classes, categories, or roles. The Chinese character 分 is pronounced as ‘bun’ or ‘wakeru.’ The former is in Sino-Japanese pronunciation and the latter in native Japanese pronunciation. If 分 is pronounced in native Japanese style, it functions as a verb that denotes dividing or classifying. The meaning of classes, categories, or roles for *-bun* thus seems to originate from the interpretation of the result nominal usage of the verb *wakeru*, that is, the result interpretation of the activity of dividing or classifying.

Other examples of compounds containing *-bun* are as follows:

- |      |                 |                |                   |                 |
|------|-----------------|----------------|-------------------|-----------------|
| (39) | a. oya-bun (親分) | b. ko-bun (子分) | c. kyaku-bun (客分) | d. shi-bun (士分) |
|      | parent-class    | child-class    | guest-class       | knight-class    |
|      | ‘boss’          | ‘follower’     | ‘guest’           | ‘knight’        |

These examples are treated as compounds in Shimada and Nagano’s lexeme-based morphology. However, they are different from the examples in (16a),

such as *zihī*, *zishitsu*, and *zikoku*, in which *zi-* and the heads are in possessive relation. Namely, *zihī* means one's own money, *zishitsu* one's own room, and *zikoku* one's own country. *Zi-* functions as a possessor and the heads *-hi* 'money,' *-shitsu* 'room,' and *-koku* 'country' refer to possessed elements. In (39a), however, *oya-* and *-bun* establish an appositive relationship, in which *oyabun* means the class of parents.<sup>6</sup> *Oyabun* denotes a category with such a property that parents would have. The same is true of the other three examples in (39b-d). Our proposal is that *zibun* also falls into the same group, strictly meaning 'the class of oneself,' and that the function of *zi-* as a pure reflexive "weakens" in compounds establishing an appositive relationship between compound constituents. This view accounts for *zibun* behaves differently even though it is a *zi-*noun compound.<sup>7</sup>

#### 4.2. Near-reflexive reading of *zi-*nouns

Our concern in the preceding subsection was the near reflexive property of *zibun*. Interestingly, it seems that there are other *zi-*nouns which also behave like near reflexives. Consider the following examples:

- (40) a. Nihon<sub>2</sub>-ga Amerika<sub>1</sub>-ga zi<sub>1/2</sub>-koku-o booei-suru to  
 Japan-Nom USA-Nom self-country-Acc defense-do C  
 omot-ta  
 think-Past  
 'Japan<sub>2</sub> thought that the USA<sub>1</sub> defended {itself<sub>1</sub>/it<sub>2</sub>}.'
- b. Toyota<sub>2</sub>-ga Nissan<sub>1</sub>-ga zi<sub>1/2</sub>-sha-no kabu-o kat-  
 Toyota-Nom Nissan-Nom self-company-Gen stock-Acc buy-  
 ta to omot-ta  
 Past C think-Past  
 'Toyota<sub>2</sub> thought that Nissan<sub>1</sub> bought its<sub>1/2</sub> company's stocks.'
- (41) a. Nihon-ga Amerika-yori kibishiku zi-koku-o  
 Japan-Nom USA-than strictly self-country-Acc  
 booei-shi-ta  
 defense-do-Past  
 'Japan defended itself more strictly than the USA did.' (sloppy

reading, non-sloppy reading)

- b. Toyota-ga Nissan-yori takusan zi-sha-no  
 Toyota-Nom Nissan-than much self-company-Gen  
 kabu-o kat-ta  
 stock-Acc buy-Past  
 ‘Toyota bought more stocks of itself than Nissan did.’ (sloppy  
 reading, non-sloppy reading)

We observed that *zikoku* and *zisha* behave like pure reflexives in (27a), (28a), (32a), and (33a). However, in the examples above, they appear to be near reflexives. (40) shows that *zi-* takes its antecedent non-locally, and (41) shows that a non-sloppy reading of *zi-* is allowed in comparative deletion constructions. (40) and (41) raise a serious problem for the idea that *zi-* in *zikoku* and *zisha* is a pure reflexive.

In Section 4.1, we focused on the semantic relationship between constituents in a compound. If they are in an appositive relationship, then near reflexive usage becomes possible. We suggest here that a near reflexive reading is possible in (40) and (41) for the same reason. In (27a) and (32a), *zi-* and *-koku* are in a possessive relation; *zikoku* can be paraphrased as *zibun-no-kuni*. In (28a) and (33a), a similar relation is identified between *zi-* and *-sha* (*zibun-no-kaisha*). However, this relation does not exist in (40) or (41), where *zi-* and *-koku/-sha* exhibit an appositive (rather than possessive) relation. The appositive relation is made clear by replacing *zikoku* and *zisha* with *zibun*. Although the resulting sentences would be slightly awkward, they are acceptable:

- (42) a. Nihon<sub>2</sub>-ga Amerika<sub>1</sub>-ga zibun<sub>1/2</sub>-o booei-suru to  
 Japan-Nom USA-Nom self-Acc defense-do C  
 omot-ta  
 think-Past  
 ‘Japan<sub>2</sub> thought that the USA<sub>1</sub> defended {itself/it<sub>2</sub>}.’  
 b. Toyota<sub>2</sub>-ga Nissan<sub>1</sub>-ga zibun<sub>1/2</sub>-no kabu-o kat-ta to  
 Toyota-Nom Nissan-Nom self-Gen stock-Acc buy-Past C



omot-ta

think-Past

‘Toyota<sub>2</sub> thought that Nissan<sub>1</sub> bought its<sub>1/2</sub> company’s stocks.’

- (43) a. Nihon-ga Amerika-yori kibishiku zibun-o booei-shi-ta  
 Japan-Nom USA-than strictly self-Acc defense-do-Past  
 ‘Japan defended itself more strictly than the USA did.’ (sloppy  
 reading, non-sloppy reading)
- b. Toyota-ga Nissan-yori takusan zibun-no kabu-o  
 Toyota-Nom Nissan-than much self-Gen stock-Acc  
 kat-ta  
 buy-Past  
 ‘Toyota bought more stocks of itself than Nissan did.’ (sloppy  
 reading, non-sloppy reading)

The awkwardness in (42) and (43) comes from the selectional restriction of *zibun*, which refers to a human being. If antecedents are countries or companies, then *zikoku* or *zisha* must be used.

Replacement of *zikoku* in (27a) and *zisha* in (28a) with *zibun*, however, gives us sentences that have completely different meanings. Compare the original sentences in (27a) and (28a) with the sentences resulting from the replacement in (27a’) and (28a’), respectively:

- (27) a. John<sub>2</sub>-ga Taro<sub>1</sub>-ga zi<sub>1/\*2</sub>-koku-o hihan-shi-ta to  
 John-Nom Taro-Nom self-country-Acc criticism-do-Past C  
 omot-ta  
 think-Past  
 ‘John<sub>2</sub> thought that Taro<sub>1</sub> criticized his<sub>1/\*2</sub> country.’
- a’. John<sub>2</sub>-ga Taro<sub>1</sub>-ga zibun<sub>1/2</sub>-o hihan-shi-ta to  
 John-Nom Taro-Nom self-Acc criticism-do-Past C  
 omot-ta  
 think-Past  
 ‘≠John<sub>2</sub> thought that Taro<sub>1</sub> criticized his<sub>1/2</sub> country.’  
 ‘=John<sub>2</sub> thought that Taro<sub>1</sub> criticized {himself<sub>1</sub>/him<sub>2</sub>}.’

- (28) a. John<sub>2</sub>-ga Tom<sub>1</sub>-ga zi<sub>1/\*2</sub>-sha-no kabu-o kat-ta  
 John-Nom Tom-Nom self-company-Gen stock-Acc buy-Past  
 to omot-ta  
 C think-Past  
 ‘John<sub>2</sub> thought that Tom<sub>1</sub> bought his<sub>1/\*2</sub> company’s stocks.’
- a’. John<sub>2</sub>-ga Tom<sub>1</sub>-ga zibun<sub>1/2</sub>-no kabu-o kat-ta to omot-  
 John-Nom Tom-Nom self-Gen stock-Acc buy-Past C think-  
 ta  
 Past  
 ‘≠John<sub>2</sub> thought that Tom<sub>1</sub> bought his<sub>1/2</sub> company’s stocks.’  
 ‘=John<sub>2</sub> thought that Tom<sub>1</sub> bought his<sub>1/2</sub> stocks.’

In the resulting sentences, the meanings of ‘country’ and ‘company’ disappear, which suggests that *zikoku* in (27a) and *zisha* in (28a) are not interchangeable with *zibun*.

We suggest here two possible explanations for the duality of *zikoku* and *zisha* within the lexeme-based framework. The data presented thus far in this subsection show that *zikoku* and *zisha* can be replaced with *zibun* when they function as near reflexives. *Zikoku* in (40) and *zisha* in (41) have the same characteristics as *zibun*. We could solve the duality problem by assuming that, in these cases, *zi-* and *-koku* and *zi-* and *-sha* are in an appositive relation, as *zi-* and *-bun* are. *Zi-* refers to Japan or the USA, and *-koku* means ‘country’ in (40). In other words, both *zi-* and *-koku* mean something related to countries, which would establish the appositive relationship between them. The same holds true of *zisha* in (41). *Zi-* refers to Toyota or Nissan, and *-sha* means ‘company,’ which establishes the appositive relationship between these bound forms. Remember that a possessive relation, but not an appositive relation, is found in *zikoku* in (27a) and *zisha* in (28a). Pure reflexivity of *zi-* in these cases would thus be retained.

The first possible explanation offered above raises a problem, however. The appositive relation between *zi-* and *-bun* and that between *zi-* and *-koku* or *-sha* might not be the same. As discussed earlier, the interpretation of *-bun*

originates from the result nominal of the verb *wakeru*, which corresponds to the native Japanese pronunciation of the Chinese character for *-bun*. In contrast, *-koku* and *-sha* cannot be taken as result nominals because their lexemes do not have verbal forms, which suggests that the relation between *zi-* and *-bun* and that between *zi-* and *-koku* or *-sha* are not parallel.

Fortunately, we have another possible avenue with which to tackle the duality problem. The second possible explanation comes from a morphological process that can be called replacement. Replacement is involved in the derivation of suffixed words such as *minimalist* and *fundamentalist*. These words appear to be derived simply through the attachment of *-ist*, but the word formation process involved in them is mysterious. The suffix *-ist* attaches to nouns, deriving words such as *violinist*, *economist*, and *essayist*, but it seems to attach to the adjectives *minimal* and *fundamental* in *minimalist* and *fundamentalist*, respectively. Considering their meanings, however, their base words must be the nouns *minimalismist* and *fundamentalismist* rather than *minimal* and *fundamental*. For example, *a minimalist* is a linguist involved in linguistic research in the theoretical framework of minimalism. *A fundamentalist* is a believer of fundamentalism, not a fundamental believer. In fact, Aronoff (1976) suggests that the form *X-ism* is the base of the form *X-ist*. That is, given the categorial selection and semantics, words such as *minimalist* should be derived from the form *X-ism-ist* (e.g. *minimal-ism-ist*) through a phonological readjustment rule, or should be derived from the form *X-ism* through the replacement of the suffix *-ism* with *-ist*.

We assume here that *zikoku* and *zisha* behaving as near reflexives are derived from *zibun* through the replacement of the bound form *-bun* with *-koku* and *-sha*, respectively. *Zikoku* and *zisha* in near reflexive use have *zibun* as their base form. When antecedents of *zi-* are non-humans, such as countries or companies, *-bun* can be replaced with other forms that are semantically more suitable, including *-koku* or *-sha*.<sup>8</sup> The problems of interchangeability and duality posed in this subsection can be solved using the lexeme-based approach.

### 4.3. *Ziko* and compounding of anaphors

The lexeme-based perspective can also shed light on some characteristics of *ziko*. Although some characteristics were already mentioned in Section 2, we call attention to them again here to show how they can be dealt with within our framework.

First, *ziko* must be characterized as a compound. As noted in Section 2.1, Kishida (2009, to appear) classifies *zi-* and *ziko-* (自己) as affixal anaphors. However, *ziko* can be a free form, as shown in (10), repeated here:

- (10) John-ga    ziko-o    hihan-shi-ta.  
       John-Nom self-Acc criticism-do-Past  
       ‘John<sub>1</sub> criticized himself<sub>1</sub>.’

The Chinese character for *-ko* (己) has another pronunciation pattern, *onore*. Shimada and Nagano (2011) assume that the lexeme ONORE has two forms. One is the bound form *-ko*, and the other is the free form *onore*. *Ziko* can be considered a compound consisting of *zi-* and *-ko*, a kind of *zi*-noun, within the lexeme-based framework.

Second, the bound forms in the compound *ziko* (*zi-*, *-ko*) are both pure reflexives. Thus, the pure reflexivity of *ziko* comes from the semantic property of the lexeme MIZUKRA or the lexeme ONORE. Kishida’s (2009, to appear) intuition seems to be that *ziko* itself is a pure reflexive, but we argue against this intuition. *Ziko* shows pure reflexivity as a *zi*-noun in the same way that *zihi* does, for example. There is also a possibility that *-ko* is a cause of pure reflexive interpretation.

Third, *ziko* is usually combined with a free Sino-Japanese verbal noun to form a new Sino-Japanese verb, whereas *zi-* is combined with a bound Sino-Japanese form to form a verbal noun. For example, the bound Sino-Japanese form *-satsu* (殺) can be combined with *zi-*, but not *ziko*, and the free Sino-Japanese form *hihan* (批判) can be combined with *ziko*, but not *zi-*.

- (44) a. {*zi-/*\**ziko*}-*satsu*-suru ‘kill oneself’  
       b. {*ziko-/*\**zi*}-*hihan*-suru ‘criticize oneself’

This difference between *zi-* and *ziko* is not surprising if *zi-* is a bound form and *ziko* is a free compound. It can be said that the bound form *zi-* and the free form *ziko* favor bound and free forms, respectively, as attaching sites.

*Ziko* poses a problem, however; consider the example *ziko-hihan-suru*. As observed by Kishida (2009, to appear), *ziko* in *ziko-hihan-suru* is a pure reflexive. In our framework, *ziko* and *hihan* are both compounds. *Ziko-hihan* can also be analyzed as a compound, consisting of the free compounds *ziko* and *hihan*. In short, the bound forms *zi-* and *-ko*, which are pure reflexives, are “embedded” in the compound *ziko* ( $[[[zi-]_N [-ko]_{N'}]_N]$ ). Further embedding of *zi-* and *-ko* occurs in the formation of *ziko-hihan* ( $[[[zi-]_N [-ko]_{N'}]_N [[hi-]_N [-han]_{N'}]_N]$ ). Our point is that this further embedding should weaken the anaphoric effect of *zi-* or *-ko*, as the following data suggest:<sup>9</sup>

- (45) a. Toyota<sub>1</sub>-ga Nissan<sub>2</sub>-kara zi<sub>1/\*2</sub>-sha-no kabu-o  
 Toyota-Nom Nissan-from self-company-Gen stock-Acc  
 kat-ta  
 buy-Past  
 ‘Toyota<sub>1</sub> bought its<sub>1/\*2</sub> company’s stocks from Nissan<sub>2</sub>.’  
 b. Toyota<sub>1</sub>-ga Nissan<sub>2</sub>-kara zi<sub>1/2</sub>-sha-kabu-o kat-ta  
 Toyota-Nom Nissan-from self-company-stock-Acc buy-Past  
 ‘Toyota<sub>1</sub> bought its<sub>1/2</sub> company’s stocks from Nissan<sub>2</sub>.’

*Zisha* in (45a) shows a subject orientation. In contrast, *zisha* in (45b), embedded in the larger compound *zisha-kabu*, does not show a subject orientation. If deeper compounding weakens the reflexivity of the lexeme, then *zi-* or *-ko* in *ziko-hihan* should lose its subject orientation property, contrary to the following example:

- (46) John<sub>1</sub>-ga Nancy<sub>2</sub>-no-heya-de ziko<sub>1/\*2</sub>-hihan-shi-ta  
 John-Nom Nancy-Gen-room-in self-criticism-do-Past  
 ‘John<sub>1</sub> criticized {himself<sub>1</sub>/\*her<sub>2</sub>} in Nancy’s<sub>2</sub> room.’

This observation poses a serious problem for the compound analysis of *ziko*.

We propose here that *ziko* is not a compound, but rather a word-form of ONORE. As observed in Section 2, *onore*, a free form of ONORE, appears as a pure reflexive in sentences. Note that its bound allomorph *-ko* rarely occurs except in *ziko*. This restricted occurrence strongly suggests that *ziko* is one of the word-forms of the lexeme ONORE. If *ziko* is another free form of ONORE, rather than a compound consisting of *zi-* and *-ko*, then the data on *ziko* presented above can be explained. In particular, it follows that *ziko* in *ziko-hihan* has the same status as *zi-* in *zi-satsu* in compounding. Although further investigation is needed, this idea is worth developing.

## 5. Summary

In this paper, we have developed a lexeme-based analysis concerned with Japanese reflexive elements, particularly, *zi*-nouns. Shimada and Nagano's (2011) explanation of *zi*-verbs is based on the idea that the bound anaphor *zi-* and the free anaphor *mizukara*, written in the same Chinese character, belong to the same lexeme and have the same semantic reflexive property. We have shown that Shimada and Nagano's explanation of *zi*-verbs is applicable to *zi*-nouns in the same way. In addition, we have revealed several related issues regarding the interface between morphology and syntax and have suggested further investigation.

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### Notes

- \* We are grateful to Koichi Takezawa for reading the manuscript carefully and providing us with valuable comments. A part of this paper was presented at the 2011 Winter International Conference on Linguistics in Seoul. We would like to thank the audience of the conference. Any remaining errors are our own.
- 1 Japanese has a writing system that utilizes Chinese characters. *Zi-* and *zibun* are written as '自' and '自分.' As discussed later, this graphic representation often provides a clue in considering the nature of the universal grammar (UG) of human language, particularly its lexicon and morphology. In this paper, we provide Chinese scripts for Japanese morphemes when necessary.
  - 2 Kishida (to appear) herself finds the following example less acceptable and less natural under a statue interpretation:
    - (i) John-ga ziko-o hihan-shi-ta.  
John-Nom self-Acc criticism-do-Past  
'John<sub>i</sub> criticized himself<sub>i</sub>.'
    - (6) predicts that *ziko* in (i), used as a non-affix, can be interpreted as a statue depicting John. However, Kishida reports that (i) sounds less natural to her under a statue reading. She points out that the unnaturalness of (i) could be ascribed to the less frequent use of the non-affixal *ziko* and its difficulty in referring to concrete objects. Her assumption that *ziko* refers to a rather abstract object is based on the observation that it is difficult to use *ziko* as an object of verbs that require something visible or touchable:
      - (ii)??John-wa (kagami-no nakade) ziko-o mi-ta.  
John-Top mirror-Gen inside self-Acc see-Past  
'John saw himself (in the mirror).'

According to Kishida, because concrete entities such as a statue are not preferable as a referent of *ziko*, (i) is awkward under a statue reading. However, (ii) is not completely unacceptable. The difficulty in obtaining a statue interpretation in (i) is much greater for us than the awkwardness of (ii).



Note also here that such a restriction about concreteness is not applied to *mizukara* or *onore*. (iii) sounds quite natural to us, which means that the concreteness restriction does not explain the loss of the statue interpretation in *mizukara* and *onore*:

(iii) John-wa (kagami-no nakade) mizukara/onore-o mi-ta.

John-Top mirror-Gen inside self-Acc see-Past

‘John saw himself (in the mirror).’

We thus conclude that, in contrast to *zibun*, the non-affixal anaphors *mizukara*, *onore* and *ziko* are intrinsically pure anaphors.

- 3 Strictly speaking, lexeme-based frameworks distinguish *word-form*, *grammatical word*, and *stem* as concepts related to the formal aspect of a lexeme (see Matthews (1991), Aronoff (1994), Bauer (2000), Carstairs-McCarthy (2000, 2002)), so we should clarify the status of *zi-* and *mizukara* and other anaphoric expressions in these terms. We leave this issue for future research. There is a possibility that our “word-forms” are stems in Aronoff’s (1994) sense, but exploring this possibility is beyond the scope of this paper.
- 4 See Amiot and Dal (2007) for a similar approach to French combining forms.
- 5 The analysis in Shimada and Nagano (2011) implies that a word consisting of combining forms such as *psychology* is a type of compound. More specifically, combining forms are not concerned with affixation, but rather compounding. In addition, the notion of combining forms is dispensed with because they are simply bound forms of lexemes. See Shimada and Nagano (2011) for details.
- 6 Shimada (2000) would analyze *oyabun* in such a way that the head *-bun* takes its complement *oya-*. See Shimada (2000) for details.
- 7 Another possible explanation is that we consider *zibun* to be a simplex word having a special anaphoric property. We do not pursue this possibility in this paper.
- 8 In addition to *-koku* and *-sha*, *-zin* (陣) ‘camp’ can function as an alternative of *-bun*. *Zi-* in *zizin* ‘one’s own camp’ behaves as a near reflexive in the following example, in which a non-local binding interpretation is possible:
  - (i) Ieyasu<sub>2</sub>-ga Nobunaga<sub>1</sub>-ga zi<sub>1/2</sub>-zin-o teki-kara mamoru to  
     Ieyasu-Nom Nobunaga-Nom self-camp-Acc enemy-from defense C  
     omot-ta  
     think-Past  
     ‘Ieyasu<sub>2</sub> thought that Nobunaga<sub>1</sub> defended {himself<sub>1</sub>/him<sub>2</sub>}.’
- 9 Koichi Takezawa (personal communication) pointed out to us a similar observation with data including *jiko-chushin-teki* (self-center-ish) ‘selfish’ (自己中心的).